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PATENT

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES
UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

MICHAEL CHARLES GRADY

CASE NO.: FA1106USNA

APPLICATION NO.: 10/617,270

GROUP ART UNIT: 1711

FILED: JULY 10, 2003

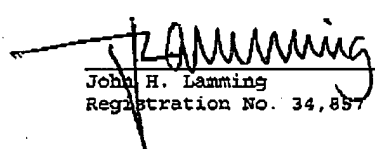
EXAMINER: OLGA ASINOVSKY

FOR: PRESSURIZED HIGH TEMPERATURE POLYMERIZATION PROCESS AND
POLYMERIZATION SYSTEM USED THEREIN

CERTIFICATE OF FACSIMILE TRANSMISSION

DATE: February 27, 2008

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John H. Lamming
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REPLY BRIEF
37 C.F.R. §41.41

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Examiner's Reply Brief mailed December 28, 2007 in the above-referenced application, Appellant submits the following Reply Brief. This Reply Brief is adapted from Appellant's Reply originally filed on March 13, 2006, with corrections necessitated by the Board's remand on August 28, 2007 resulting in Appellant filing a corrected Appeal Brief on October 5, 2007. In addition, two minor typographical errors of omission overlooked during the final edit of the March 2006 Reply Brief are corrected in this revision.

Application No.: 10/617,270
Docket No.: FA1106USNA

FEB 27 2008

Page 2

3. ARGUMENT

I. Whether Claims 1-3, 5-8, 10-12, 16-21, 24-33, and 36-46 Are Anticipated Under 35 U.S.C. §102(b) by Prentice.

Claims 1-3, 5-8, 9, 10-12, 16-22, 24-33, and 36-46 stand rejected under 35 U.S.C. §102(b) as being anticipated by Prentice.

Appellant maintains that the stages of the claimed process and the stages of Prentice's polymerization are patentably distinguishable. Prentice's process comprises (i) initially polymerizing non-carboxylic comonomers in the presence of carboxylic monomers to yield 3% to 12% polymer product, and then (ii) copolymerizing a conjugated diene with the unreacted non-carboxylic comonomer from step (i) in the partially polymerized latex from step (i) (Col. 1, lines 47-54). The first stage is "pre-polymerization" (Col. 1, line 27) in heterogeneous medium to form an emulsion of the low concentration of latex formed in this step by conversion of a small amount of the vinyl monomer. In the second stage, the conjugated diene primary monomer is copolymerized with the unreacted non-carboxylic comonomer from the first stage in the presence of the partially polymerized latex from the first stage. See Prentice *loc. cit.*

The Appellant's process in its simplest embodiment is a two-stage process: in the first stage, monomers are partially polymerized under effective polymerization temperatures and sub-reflux gage pressures in the hybrid reactors and in the second stage, polymerization of the unreacted monomers from stage 1 is completed in the batch reactors under effective polymerization temperatures and reflux gage pressures. There is no introduction of a heterogeneous species, as in Prentice, required to form the desired polymer.

The Examiner asserts that the first stage of Prentice is readable on the first stage of the application under review because in each case there is partial polymerization in that stage. As already noted by Appellant, however, the goal in Prentice is to control the degree of polymerization *below* a fairly low threshold, 12% in the first stage, for reasons highly pertinent to the art of producing latex. The goal in the application is to achieve much higher levels of polymerization, and then to complete polymerization of any

Application No.: 10/617,270
Docket No.: FA1106USNA

Page 3

unreacted monomers in the second stage. Claim 32 is particularly exemplary of the distinction since that claim addresses conversion of a substantial portion of the monomers in the first stage. The only instance in which the Examiner apparently addresses the differences between the second stages in the reference and in the application is with regard to claim 33 (process for producing a graft copolymer). In claim 33, the first stage polymerization results in the formation of macromonomers. The macromonomers are then reacted under batch polymerization conditions. Once this second stage has been carried out, the heterogeneous species, comprising one or more batch reactor monomers, are polymerized to form a polymer backbone, onto which the macromonomers are grafted to form the graft copolymer. While claim 33 and its dependent claims are the only ones in the application that appear to require the introduction of a heterogeneous species into the overall reaction scheme after some initial polymerization has taken place, claim 33, as briefly summarized herein, clearly does not read on Prentice.

For reasons stated above and previously made of record, Appellant respectfully submits that Prentice does not anticipate the present invention.

**II. Whether Claims 1-46 Are Unpatentable Under
35 U.S.C. §103(a) Over Berge in View of Prentice.**

Claims 1-46 stand rejected as unpatentable under 35 U.S.C. §103(a) over Berge in view of Prentice.

Appellant reiterates all remarks and arguments in traverse of Prentice presented above.

The principal object in Berge was to provide an efficient method for producing macromonomers that would be useful in producing a variety of polymers having applications that would be apparent to skilled practitioners in the art through production methods not disclosed or claimed in Berge. The primary object of Prentice was to produce carboxylated latex compositions, especially carboxylated butadiene-styrene latexes, with reduced presence of the contaminant 4-phenylcyclohexene (4-PCH) and possessing desirable properties of film stiffness and stress-strain relationship. Prentice deals solely with emulsion polymerization at lower temperatures. Emulsion polymerization is heterogeneous polymerization and is directed to transfer between phases.

Application No.: 10/617,270

Docket No.: FA1106USNA

Page 4

The Examiner recognizes (page 10, Examiner's Answer) that there are differences between the claims under review and the Berge disclosure. The Examiner then argues that it would have been obvious to one skilled in the art to combine Prentice with Berge to conceive the second reaction stage in which unreacted monomers from the first stage are reacted in the presence of polymer from the first stage to convert the remaining monomer. Appellant submits that there would have been no motivation for one skilled in the art to which this application pertains to combine Prentice with Berge. Prentice teaches that a relatively low conversion of non-carboxylic comonomer and ethylenically unsaturated carboxylic comonomer is desirable to provide a partially polymerized latex medium for reacting a conjugated diene with the unreacted comonomers in said medium. This technique results in a relatively inexpensive process for producing uncontaminated latex, a problem for which the industry long sought a solution. Accordingly, there is nothing in either Berge or Prentice to teach or suggest that combining these two references would lead to the claimed processes.

For the foregoing reasons, and all reasons previously made of record, it would not have been possible to achieve the results of the present invention by modifying Berge. There would have been no motivation for, or reasonable expectation of success in, combining Prentice with Berge. Accordingly, the invention is not obvious over Berge in view of Prentice.

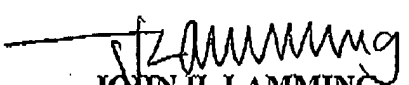
The Board of Appeals is respectfully requested to remand this application to the Examiner with a direction to allow the claims, or in the alternative to reopen prosecution so that claim amendments may be entered to place the claims in allowable form.

Application No.: 10/617,270

Docket No.: FA1106USNA

Page 5

Respectfully submitted,


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